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REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested in view of the foregoing amendments and discussion presented herein.

1. Rejection of Claims 1-6 under 35 U.S.C. §112, second paragraph.

Claims 1-6 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for the reason that the Examiner considered the term "peak-rate shaper" to be unclear. The Applicant responds as follows.

From FIG. 1 and the descriptions in the specification, it can be seen that the peak-rate shaper provides a simple "leaky-bucket" shaper that receives a bursty traffic stream at its input and transmits at a constant rate *r*. The goal is to constrain the maximum rate of the source, so that we can characterize the traffic coming into our system with a parameter (called the peak rate *r*).

The Applicant's invention provides a method of characterizing the losses that would result if such traffic is passed through a device with a finite buffer *B*, so it is necessary to know the peak rate of the source (that is, the loss rate would be a function of the peak rate *r*). Within the scope of this invention, the peak rate shaper is only used to describe the source traffic (that is, we are saying that the traffic we are dealing with has a maximum rate of *r*). Such a traffic stream with peak rate *r* can be obtained by passing traffic with unknown peak rate through a leaky-bucket shaper with rate *r*. The invention does not depend upon the details of the device that performs the shaping.

Accordingly, the Applicant has amended independent Claims 4 and 6 to provide more specificity with regard to the peak-rate shaper as follows:

Claim 4. A portion of Claim 4 was amended as follows: *"transmitting the frames of an actual or simulated traffic source into a peak-rate shaper having an input queue mechanism and producing a new time sequence for the bit-stream of the input traffic source as output traffic at rate r;"*.

Support for the amendment of Claim 4 is found in FIG. 1 and throughout the specification including page 6, lines 12-17: *"comprising an input queue mechanism 16*

within which a new time sequence for the bit-stream of the input traffic is created. A small sequence of frames 18a-18g is presently shown represented within the queue 16. In response to different values of the peak rate r, the maximum queue depth 20, denoted by $s(r)$, within input queue 16 of peak-rate shaper 14 will vary. Frames are removed from input queue 16 by an output 22 of the traffic stream at a rate r."

Claim 6. A portion of Claim 6 was amended as follows: *"transmitting the frames of an actual or simulated traffic source into a peak-rate shaper having an input queue mechanism, and producing a new time sequence for the bit-stream of the input traffic source within an output traffic of rate r;".*

Support for the amendment of Claim 6 can also be found in the specification at page 6, lines 12-17.

In view of the aforesaid amendments, the Applicant respectfully submits that Claims 4-6 are not indefinite under 35 U.S.C. §112, second paragraph, and requests that the rejection of Claims 4-6 be withdrawn. With regard to Claims 1-3, the rejection is now moot since those claims have been canceled.

2. Allowability of Claims 4-6.

The Applicant notes with appreciation the Examiner's determination that Claims 4-6 would *"be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112, second paragraph, as set forth in the Office action".*

In response, Claims 4 and 6 have been amended as discussed in Section 1 of these Remarks. Therefore, amended Claims 4 and 6, as well as Claim 5 which depends from Claim 4, should now be in a condition for allowance.

3. Cancellation of Claims 1-3.

Claims 1-3 have been canceled in order to expedite prosecution. Cancellation of Claims 1-3 is without disclaimer of the subject matter thereof and does not constitute an indication of acquiescence to the respective grounds for rejection addressed above. The Applicant reserves the right to pursue the original scope of Claims 1 and 3 (and all

claims depending therefrom) in the future, such as for example through a continuation application.

4. New Claims 7-16.

Claim 7, 8 and 15. These new dependent claims depend from independent Claims 4, 6 and 11 respectively. These claims were added to provide additional information about the traffic source, the subject matter of which was originally found in Claim 3.

Claim 9. This new claim depends from independent Claim 6, and describes exploiting the piecewise linearity between the points at which the slope changes in the loss curve (i.e. as given by *"iteratively examining the busy periods to determine points of loss and busy period breaks for the given buffer size B"*).

Support can be found throughout the specification, including page 13, lines 6-10: *"For a video stream of finite duration, the values of the buffer size B that cause either a loss in a busy period with no prior loss, or a break in a busy period that already experiences loss, form a finite set. It will be appreciated that only the values of B belonging to this set need be computed to exactly determine the loss curve, since the loss curve is piecewise linear between adjacent buffer points belonging to this finite set."*

Claims 10 and 16. Claims 10 and 16 depend from independent Claims 6 and 11, respectively, and describe extending the determination of loss rates across a range of given transmission rates ρ.

Support for these claims can be found on page 2, line 20 through page 3, line 5 of the specification as follows: *"The problem of determining the amount of network resources to allocate then becomes the problem of choosing a specific vector from the three-dimensional space (ρ, B, ε). In order to simplify the problem, either the transmission rate ρ or the buffer size B can be fixed and the corresponding curves calculated. The ε versus B curve for a specific video source transmission rate ρ*

enables the estimation of the loss rate resulting from a given buffer size. A plot of the loss rate as a function of the buffer size for a given rate ρ *is referred to as the* loss curve *of the associated source at the given rate* ρ*."*

Claim 11. This is an independent claim drawn to the aspects of the invention in which the loss rates are determined by detecting the slope changes in the loss curve across the range of buffer sizes and exploiting piecewise linearity between those points to obtain the full loss curve for the transmission rate.

Support for this aspect of the invention is described through the specification including page 3, lines 16-19 as follows: *"The method exploits the piecewise linearity of the loss curve and computes only the points at which the slope of the loss curve changes, therefore, the method is capable of exactly characterizing the loss curve with the minimum number of points."*

It should be readily appreciated that this aspect departs from conventional methods which must compute a loss rate for each change in buffer size for a particular transmission rate.

Claim 12. This claim depends from Claim 11, and recites how the loss rate for each buffer size B need not be computed, an advantage described above and recited in the specification, such as page 3, lines 16-19.

Claim 13. This claim depends from Claim 11, and recites how the slope change is detected in the loss curve. Support can be found throughout the specification, including page 13, lines 6-10 as follows: *"For a video stream of finite duration, the values of the buffer size* B *that cause either a loss in a busy period with no prior loss, or a break in a busy period that already experiences loss, form a* finite set. *It will be appreciated that only the values of* B *belonging to this set need be computed to exactly determine the loss curve, since the loss curve is piecewise linear between adjacent buffer points belonging to this finite set."*

Claim 14. This claim depends from Claim 11, and recites a limit on the largest buffer size that must be considered in computing loss rates for a given transmission rate ρ.

Support can be found throughout the specification, including page 15, lines 13-18 as follows: *"The entire loss curve of the elementary video stream for a given transmission rate ρ may therefore be obtained by starting from a buffer size equal to the corresponding burstiness value $\sigma(\rho)$, which is equal to the global maximum queue size when the buffer size is infinity, and progressively considering successive buffer sizes at which either (i) a busy period with no prior loss starts to experience losses, or (ii) a busy period experiencing loss breaks into smaller busy periods."*

Applicant respectfully submits that new Claims 7-16 are in a condition for allowance.

5. Conclusion.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

The Applicant also respectfully requests a telephone interview with the Examiner in the event that there are questions regarding this response, or if the next action on the merits is not an allowance of all pending claims.

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Respectfully submitted,

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